# Chapter 3 Route 99 Projects

## 3.1 Long-Range Plans for Route 99

Route 99 has been the subject of many planning studies and documents. The most critical ones completed to date include:

- The 1998 Interregional Transportation Strategic Plan
- Transportation Concept Reports for Route 99 (District 6 and District 10)

According to the 1998 Interregional Transportation Strategic Plan (ITSP), the Route 99 vision for the year 2020 ranges from a 4- to 8-lane freeway. This vision applies from south of Bakersfield to the Route 99 junction with Route 70 in Sutter County. The Strategic Plan recognizes the important role of Route 99 and seeks to:

- Clear all remaining freeway gaps south of the Route 99/70 junction.
- Add freeway lane capacity to handle increased interregional travel demand for goods movement and major commute volumes. The objective is to complete a 4- to 8-lane freeway for the entire length.

The Transportation Concept Reports for Route 99 in both Districts 6 and 10 support the ITSP objectives. The Transportation Concept Reports are long-range documents that establish a planning concept for the Route 99 corridor through the year 2030. They define the appropriate level of service (LOS) target, as well as facility roadway types needed to accomplish this target (i.e., 6- to 8-lane freeway). The 2030 facility objective is a minimum 6-lane freeway. In addition, there are proposed improvements to an 8-lane freeway in the urbanized areas of Bakersfield, Fresno, Modesto, and Stockton. The estimated cost to accomplish the 2030 Concept Facility throughout the corridor is about $6 billion in 2005 dollars.

The intention of the Route 99 Corridor Business Plan is to take the information contained in these planning studies and develop a 20-year implementation plan for achieving the route concept, goals, and objectives. By identifying the specific projects and possible funding strategies, Caltrans hopes to take these planning studies from concept to reality in the next 20 years. The table containing a list of these projects and their categorized priorities are found in Section 3.4 of this document.

## 3.2 Projected Operations on Route 99

The Transportation Concept Reports described in the previous section indicate the appropriate level of service (LOS) target or Concept LOS, and roadway types for the route. LOS describes operating conditions on a roadway. Like a report card, the LOS is defined in

categories ranging from A-F, with A representing the best traffic flow and F representing the worst congestion. As a general rule, the Concept LOS for Route 99 is D in urban areas and C in rural areas. LOS C or D are the targets because they provide the highest traffic throughout with the least traveler disruption.

Figure 3.1 shows the current (2005) LOS along the Route 99 corridor, which ranges from LOS B to LOS F. Current Annual Daily Traffic (ADT) volumes range from 42,000 to over 100,000, but are projected to be 84,000 to over 260,000 by 2030. Without any project improvements, the LOS would deteriorate to predominately LOS E or F by the year 2030. With the project improvements described in this Business Plan, which largely comprise the 2030 Concept Facility, the urban areas along the route will be at LOS E or F, but there will be many segments of Route 99 at LOS D. LOS F in the urban areas will typically result in speeds of 25 miles per hour or less during commute periods. Please refer to Figure 3.2 for the 2030 Concept Facility.

Additional information for each project is listed in Appendix B, Figures B.1 and B.2, which provide Performance Measures data for Route 99 projects. This includes data on 5-axle trucks, peak hour and ADT volumes, level of service, and more.


**Figure 3.1 Current Route 99 Levels of Service**

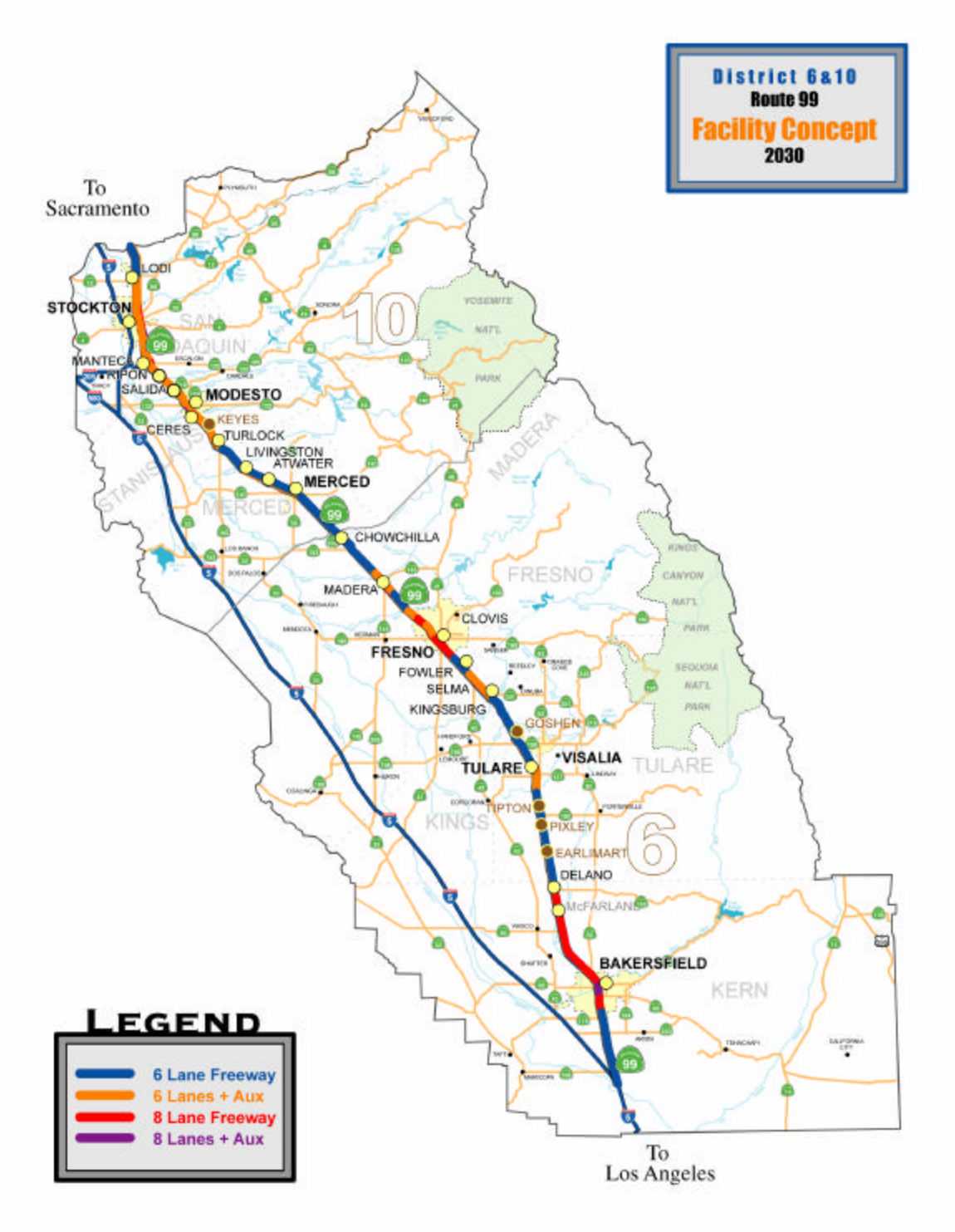



**Figure 3.2 2030 Concept Facility**

## 3.3 Regional Project Priority Categories

### Priority Category 1—Freeway Conversion

This category consists of projects to convert the existing Route 99 expressway sections to a full 6-lane freeway. Projects in this category will close at-grade intersections and add interchanges where appropriate to maintain local circulation, as well as widen the route to 6 lanes within the project limits. As indicated previously in this report, these projects serve a dual purpose. Not only will they improve the capacity and operation of the route, they will significantly improve safety as well by eliminating the conflicting movements that result from vehicles attempting to enter, leave, or cross the highway at the at-grade intersections. This category will be completed by the currently programmed projects on Route 99 in Madera and Merced counties. It should be noted that while all of these gap closure projects are programmed, they are not all fully funded.

### Priority Category 2—Capacity-Increasing Projects

Priority Category 2 consists of projects that widen Route 99 to a minimum of 6 lanes throughout the corridor. Projects to widen Route 99 to 8 lanes in some urban areas, where feasible, will also be considered for this category. While the primary goal of these projects is to increase capacity, there are safety benefits as well. Eliminating or reducing the incidences of stop-and-go traffic on the route will reduce the number of congestion-related accidents that currently occur.

### Priority Category 3—Major Operational Improvements

This category consists of projects that will improve existing outdated interchanges and construct auxiliary lanes in urban areas. As with Priority Category 2, these projects also have a safety-related benefit.

### Priority Category 4—New Interchanges

Priority Category 4 consists of projects that will construct interchanges at new locations on Route 99. These new interchanges are proposed to accommodate growth and development of areas along Route 99.

**How the Categories Coincide with Current Programmed and Candidate Projects**

Caltrans' first priority is to convert all remaining expressway segments to freeway. Freeway conversion projects are thus assigned Priority Category 1. By fully funding all remaining components of the programmed projects, the goal associated with Priority Category 1 would be accomplished.

Priority Category 2's stated goal is to increase capacity and provide a minimum 6-lane roadway. After completion of the three programmed 4- to 6-lane projects, approximately 105 miles of the facility will remain 4 lanes. Fourteen of the 22 capacity-increasing candidate projects propose to convert remaining 4-lane segments to 6 lanes. The remaining eight capacity-increasing projects propose to convert the existing 6-lane segments to 8 lanes. Although Caltrans has a defined goal of achieving a minimum 6-lane facility, 4- to 6-lane projects may not always take precedence over 8-lane projects. In this Business Plan, all capacity projects fall into the same Priority Category; therefore, additional consideration will be given to such issues as operations and safety in determining final priorities.

Projects that propose improvements to roadway operations are in Priority Category 3. The Priority Category 3 projects included in this Business Plan are auxiliary lane projects and interchange improvement projects. Operational interchange projects will vary in magnitude of scope. A small-scale project might construct additional ramp lanes, signalize ramp intersections, and/or improve ramp geometry. A larger scale project might replace a structure or structures or modify the entire configuration of the interchange. The scope of these projects would be determined based on the project's stated purpose and need.

Projects prompted by a need to improve local road circulation due to ongoing local development are in Priority Category 4. Three of the projects in this category propose new interchanges at new locations and one project proposes lengthening mainline structures to allow widening of a local road.

## 3.4 Route 99 Programmed and Candidate Projects to be Prioritized

Caltrans Planning has identified 67[3] projects to be prioritized; they include 13 programmed projects (See Keymap Figure 3.3) and 54 candidate projects (See Keymap Figure 3.5). These programmed and candidate projects are consistent with the Regional Transportation Plans. Fact sheets for each project are in Appendix A. The fact sheets will be used as a tool for determining project funding priorities on Route 99. Each fact sheet includes:

- A brief project description based on a previously completed Project Study Reports (PSR) or based on an assumed scope when no PSR has been completed.
- Primary and secondary benefits of the project.
- Programming information, including phase of the project, a rough cost estimate, and estimated time necessary to deliver the project.
- Highway maintenance impacts shown in tabular form.

[3] Projects costing $8 million or more. Smaller projects while not specifically included in the project lists, are included in the program costs.

- Issues related to delivery of the project.
- A table that lists consistency with the 13 controlling Interstate system standards.

The 13 programmed projects include four projects to convert expressway segments to freeway, three projects to add capacity by converting 4-lane segments to 6 lanes, and five projects to make operational improvements to interchanges. The 54 candidate projects include 22 projects that would increase mainline capacity, 28 projects that would improve facility operations, and four interchange projects that would improve local road circulation. Operational projects include projects to construct auxiliary lanes or make interchange improvements. Improvements to interchanges range in scope from ramp modifications to reconstruction of an existing interchange. The interchange projects that propose to improve local road circulation range in scope from lengthening the existing bridge structure to complete construction of a new interchange with a new freeway connection.

### 3.4.1 Programmed Projects

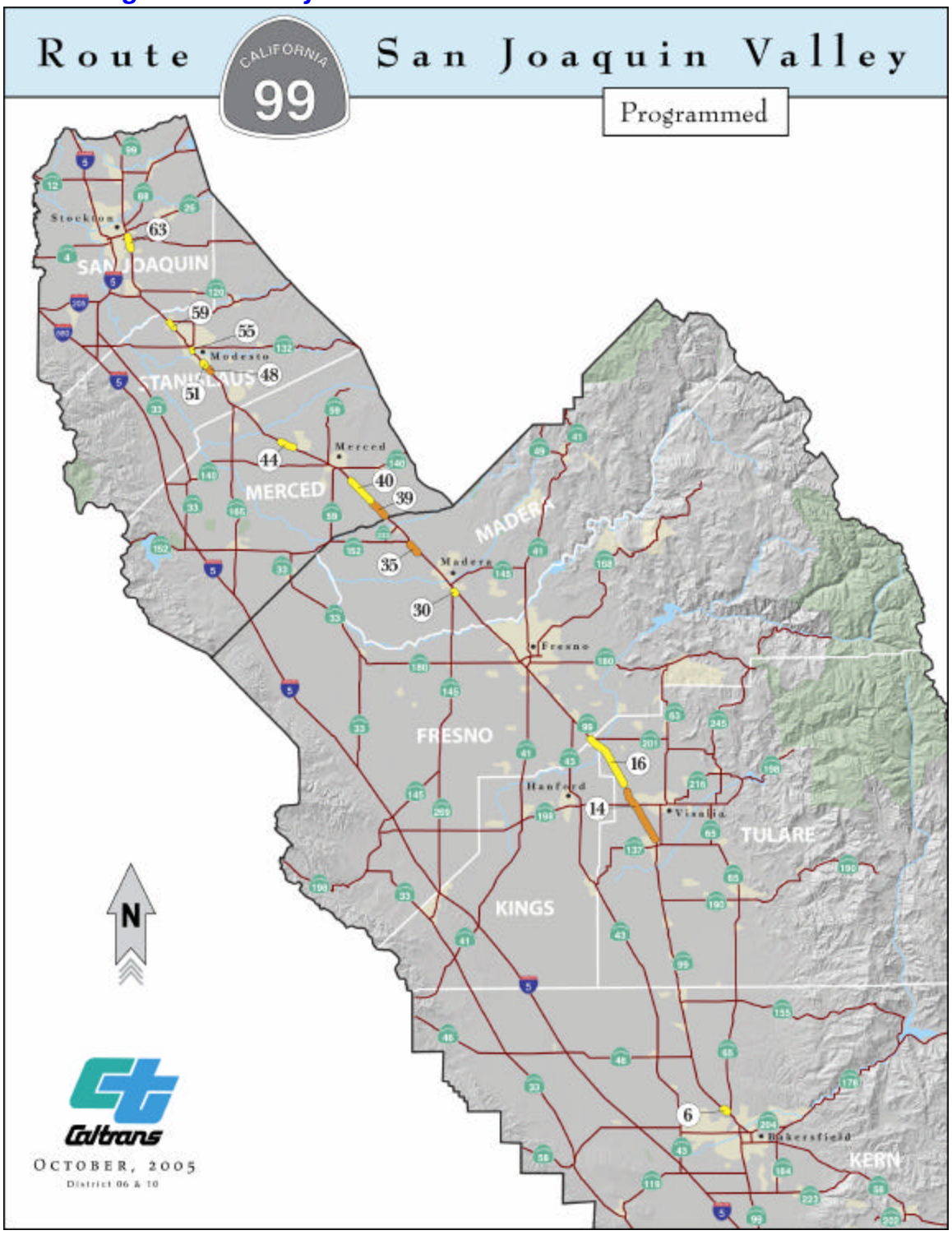



**Figure 3.3 Map of Programmed Projects**

## Figure 3.4 Route 99 Programmed Capacity and Interchange Projects Not Yet Advertised

November 10, 2005

| PROJECT NUMBER | COUNTY | ROUTE | POSTMILE | EXPENDITURE AUTHORIZATION | FROM | TO | PROJECT NAME | PROJECT DESCRIPTION | Advertise Schedule | R/W and CONSTRUCTION CAPITAL COSTS (X $1,000) | SUPPORT COSTS SB45 REPORTS (X $1,000) | TOTAL COSTS PER PROJECT (X $1,000) | REGIONAL PRIORITY CATEGORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | KER | 99 | R30.5/R31.1 | 06-433501 | At D20 the7th Standard Rd. Interchange | | 7Th Standard Road Widening | Modify Interchange | 2006 | **$14,000** | *$1,290* | $15,000 | 3 |
| 14 | TUL | 99 | 30.6/41.3 | 06-360200 | Prosperity Ave. | N. Goshen OH. | Tulare-Goshen 6-Lane | Widen from 4 Lane Freeway to 6 Lane Freeway | 2011 | **$87,000** | *$16,000* | $103,000 | 2 |
| 16 | TUL, FRE | 99 | 41.3/53.9, 0.0/1.0 | 06-324500 | N. of Goshen | N. of Conejo Ave OC. | Goshen / Kingsburg 6-Lane | Widen from 4 Lane Freeway to 6 Lane Freeway | 2009 | **$139,000** | *$17,000* | $156,000 | 2 |
| 30 | MAD | 99 | 9.1/9.8 | 06-407201 | S. Madera OC. | N. of Rte 99/145 | Gateway Interchange | Modify Interchange | 2005 | *$9,000* | *$3,000* | $12,000 | 3 |
| 35 | MAD | 99 | 19.6/22.6 | 06-293301 | S. of Ave 21 | S. of 99/152 Separation. | Fairmead Freeway | Convert 4 Lane Expressway to 6 Lane Freeway on 8 Lane Freeway R/W Alignment | 2006 | $43,000 | $10,000 | $52,000 | 1 |
| 39 | MER | 99 | 0/4.6 | 10-415800 | Madera County Line. | Buchanan Hollow Rd. | Plainsburg RD Freeway | Convert 4 Lane Expressway to 6 Lane Freeway on 8 Lane Freeway R/W Alignment | 2009 | **$87,000** | *$12,000* | $100,000 | 1 |
| 40 | MER | 99 | 4.6/10.5 | 10-415700 | Buchanan Hollow Road. | 0.5 Km N. of Mchenry Rd. | Arboleda DR FWY | Convert 4 Lane Expressway to 6 Lane Freeway on 8 Lane Freeway R/W Alignment | 2009 | **$125,000** | *$18,000* | $143,000 | 1 |
| 44 | MER | 99 | 23.8/26.5 | 10-414801 | 0.4 Km N. of Atwater OH. | 0.4 Km S. of Arena Way. | Atwater Freeway | Convert 4 Lane Expressway to 6 Lane Freeway on 8 Lane Freeway R/W Alignment | 2006 | $45,000 | $2,000 | $47,000 | 1 |
| 48 | STA | 99 | 9.7/10.9 | 10-1A6900 | 0.5 Km S. | 1.0 Km N. of Mitchell Rd. | Mitchell RD / Service RD Interchange | Reconstruct Interchange | 2009 | **$54,000** | *$400* | $54,000 | 3 |
| 51 | STA | 99 | R11.9 | 10-2A7701 | City of Ceres at Whitmore Overcrossing | | Rte 99 / Whitmore Ave Interchange | Reconstruct Interchange | 2007 | $20,000 | $7,000 | $27,000 | 3 |
| 55 | STA | 99/132 | 15.6/17.5 | 10-403500 | Rte 132 | Kansas Ave | Route 132 Expressway | Interchange Reconstruction | 2008 | *$35,000* | *$15,000* | *$50,000* | 3 |
| 59 | STA | 99 | 20.8/21.4 | 10-472100 | Deer Creek Br. | 0.3 Km South to 0.6 Km North of Pelandale Avenue | Pelandale Interchange | Modify Interchange | 2008 | **$68,000** | *$7,000* | $75,000 | 3 |
| 63 | SJ | 99 | 15.0/18.6 | 10-3A1000 | 0.6 Km N.of Arch Rd. | 0.2 Km S. of Rte 4 West | South Stockton 6-Lane | Widen to 6 Lanes | 2012 | **$127,000** | *$3,000* | $130,000 | 2 |
| | | | | | | | | | | | **OVERALL COSTS** | **$964,000** | |

| Legend: |
|---|
| Inside a Box = Funded |
| *Italic = Partially Funded* |
| **Bold = Not Funded** |

### 3.4.2 Candidate Projects

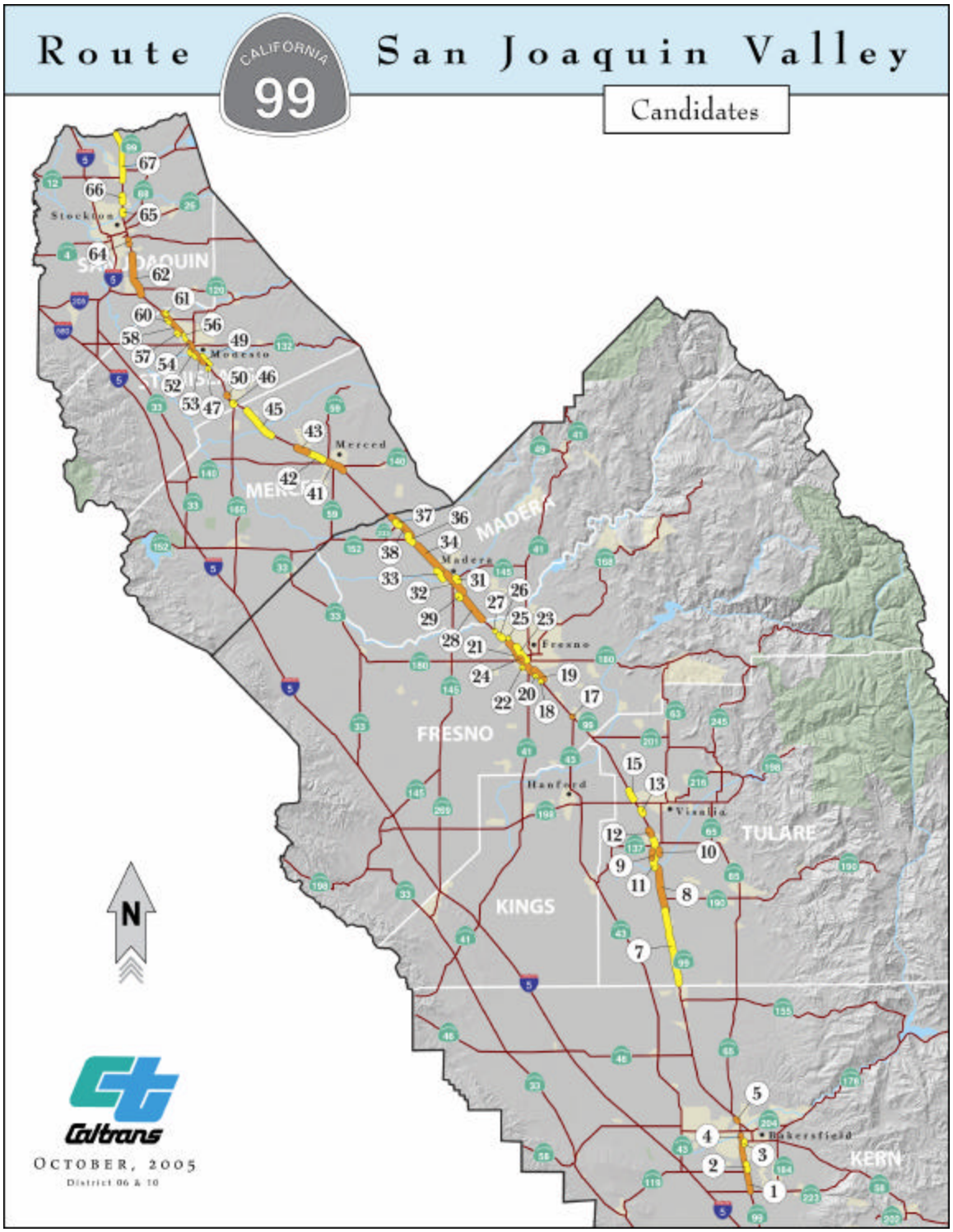



**Figure 3.5 Map of Candidate Projects**

## Figure 3.6 Priority Category 2: Capacity-Increasing Projects

| CATEGORY 2 CAPACITY INCREASING PROJECTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Key Map Project Number | CO | RTE | PM | | EA | FROM | TO | PROJECT DESCRIPTION | Construction and R/W Capital Cost | Support Costs Estimated | Total Costs Per Project | Regional Priority Category |
| 1 | KER | 99 | 13.4 | 22.6 | | Bear Mountain Blvd | | Phased, widen to 8 lanes | 40,000 | 12,000 | 52,000 | 2 |
| 7 | TUL | 99 | 0.0 | 16.0 | | Kern Co Line | South of Tipton | Widen From 4F to 6F | 100,400 | 27,000 | 127,400 | 2 |
| 8 | TUL | 99 | 16.0 | 25.5 | | South of Tipton | Avenue 200 | Widen From 4F to 6F | 65,500 | 20,000 | 85,500 | 2 |
| 11 | TUL | 99 | 25.4 | 30.5 | 06-48950K | Avenue 200 | Prosperity Ave | Widen from 4F to 6F | 85,400 | 22,000 | 107,400 | 2 |
| 19 | FRE | 99 | 15.8 | 18.5 | | Central Ave | Jensen Ave | Widen from 6F to 8F | 36,000 | 11,100 | 47,100 | 2 |
| 21 | FRE | 99 | 18.5 | 26.6 | | Jensen Ave | Ashland Ave | Widen from 6F to 8F | 165,000 | 49,500 | 214,500 | 2 |
| 25 | FRE | 99 | 26.6 | 31.6 | 06-44260K | Ashlan Ave | Madera Co Line | Widen from 4F to 6F | 40,800 | 12,000 | 52,800 | 2 |
| 28 | MAD | 99 | 0.0 | 7.5 | | Fresno Co Line | Avenue12 | Widen from 4F to 6F | 53,600 | 10,000 | 63,600 | 2 |
| 32 | MAD | 99 | 7.5 | 12.8 | 06-47090K | Avenue 12 | Avenue 16 | Widen from 4F to 6F | 127,000 | 34,000 | 161,000 | 2 |
| 34 | MAD | 99 | 12.8 | 20.5 | | Avenue 16 | Avenue 21 1/2 | Widen from 4F to 6F | 60,600 | 16,000 | 76,600 | 2 |
| 38 | MAD | 99 | 22.5 | 29.4 | | SR 152 Interchange | Merced Co Line | Widen from 4F to 6F | 76,600 | 20,000 | 96,600 | 2 |
| 41 | MER | 99 | 12.6 | 17.6 | | S. of Childs Ave. | Black Rascal Creek | Convert 4F to 6F | 140,000 | 28,000 | 168,000 | 2 |
| 42 | MER | 99 | 17.6 | 21.3 | | Black Rascal Creek | East Atwater OH | Convert 4F to 6F | 105,000 | 20,000 | 125,000 | 2 |
| 43 | MER | 99 | 21.3 | 24 | | East Atwater OH | West Atwater OH | Convert 4F to 6F | 54,000 | 14,000 | 68,000 | 2 |
| 45 | MER | 99 | 28.8 | 36.2 | | Hammatt Avenue | South Turlock OC | Convert 4F to 6F | 51,000 | 11,000 | 62,000 | 2 |
| 49 | STA | 99 | R10.0 | R13.2 | 10-0E560K | Mitchell Road | Hatch Road | Widen 6F to 8F | 120,000 | 27,000 | 147,000 | 2 |
| 58 | STA | 99 | R18.5 | R24.7 | 10-0E560K | Carpenter Road | San Joaquin County Line | Widen 6F to 8F | 50,000 | 15,000 | 65,000 | 2 |
| 52 | STA | 99 | R13.2 | R15.1 | 10-0E560K | Hatch Road | Tuolumne Blvd | Widen 6F to 8F | 60,000 | 18,000 | 78,000 | 2 |
| 54 | STA | 99 | R15.1 | R16.8 | 10-0E560K | Tuolumne Blvd | Kansas Avenue | Widen 6F to 8F | 75,000 | 18,000 | 93,000 | 2 |
| 56 | STA | 99 | R16.8 | R18.5 | 10-0E560K | Kansas Avenue | Carpenter Road | Widen 6F to 8F | 50,000 | 10,000 | 60,000 | 2 |
| 62 | SJ | 99 | 5.3 | 15.0 | 10-0E610K | SR-120 in Manteca | Arch Rd. in S.Stockton | Widen 4F to 6F | 203,500 | 35,000 | 238,500 | 2 |
| 67 | SJ | 99 | 28.3 | 38.8 | | Harney Road | Sacramento County Line | Widen 4F to 6F | 130,000 | 38,000 | 168,000 | 2 |
| | | | | | | | | | | TOTAL | 2,357,000 | |

## Figure 3.7 Priority Category 3: Major Operational Improvement Projects

| CATEGORY 3 MAJOR OPERATIONAL IMPROVEMENTS PROJECTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Key Map Project Number | CO | RTE | PM | | EA | FROM | TO | PROJECT DESCRIPTION | Construction and R/W Capital Cost | Support Costs Estimated | Total Costs Per Project | Regional Priority Category |
| 3 | KER | 99 | 22.7 | 23.2 | 06-46011K | Ming Ave | SR58 | Construct Auxiliary Lane | 22,500 | 1,800 | 24,300 | 3 |
| 4 | KER | 99 | 23.9 | 24.6 | 06-46012K | California Ave | SR58 | Construct Auxiliary Lane | 26,700 | 2,100 | 28,800 | 3 |
| 5 | KER | 99 | 27.8 | 28.1 | 06-49710K | Olive Dr. Interchange | | Reconstruct Interchange | 13,000 | 3,900 | 16,900 | 3 |
| 10 | TUL | 99 | 27.6 | 28.0 | 06-33990K | Paige Ave Interchange | | Reconstruct Interchange | 45,500 | 10,500 | 56,000 | 3 |
| 12 | TUL | 99 | 31.4 | 32.4 | 06-33220K | Cartmil Ave Interchange | | Reconstruct Interchange | 39,000 | 10,000 | 49,000 | 3 |
| 13 | TUL | 99 | 36.1 | 36.8 | 06-48740K | Caldwell Interchange | | Reconstruct Interchange | 44,000 | 10,000 | 54,000 | 3 |
| 15 | TUL | 99 | 39.6 | 41.3 | 06-47150K | Betty Dr Interchange | | Reconstruct Interchange | 45,100 | 10,500 | 55,600 | 3 |
| 17 | FRE | 99 | 6.5 | | | Floral Rd/SR 43 Interchange | Selma | Replace bridge structure and Floral Rd | 19,000 | 5,700 | 24,700 | 3 |
| 18 | FRE | 99 | 15.8 | | | Central Ave/Chestnut Ave Interchange | | Interchange Improvements | 45,000 | 10,500 | 55,500 | 3 |
| 20 | FRE | 99 | 16.8 | 17.3 | | Cedar Ave/North Ave Interchange | | Interchange Improvements | 45,000 | 10,500 | 55,500 | 3 |
| 22 | FRE | 99 | 20.3 | | | Ventura Ave Interchange | | Interchange Improvements | 45,000 | 10,500 | 55,500 | 3 |
| 23 | FRE | 99 | 20.7 | 24.4 | 06-39210K | Fresno St | Clinton Ave | Add NB and SB auxiliary lanes | 157,000 | 14,800 | 171,800 | 3 |
| 24 | FRE | 99 | 20.5 | 21.0 | N/A | Toulumne St | Stanislaus St | Interchange Improvements | 8,000 | 2,400 | 10,400 | 3 |
| 26 | FRE | 99 | 27.3 | 28.3 | 06-442700 | Shaw Ave Interchange | | Interchange Improvements | 33,200 | 12,000 | 45,200 | 3 |
| 29 | MAD | 99 | R7.1 | R7.9 | 06-47100K | Avenue 12 | | Reconstruct Interchange | 46,500 | 10,700 | 57,200 | 3 |
| 31 | MAD | 99 | 9.7 | 10.7 | | Route 99/145 | | Reconstruct Interchange | 30,600 | 7,500 | 38,100 | 3 |
| 36 | MAD | 99 | 21.7 | 23.7 | | SR 152 Interchange | | Reconstruct Interchange and rail crossing | 68,000 | 17,000 | 85,000 | 3 |
| 37 | MAD | 99 | 26.1 | 27.2 | | Route 99/233 | | Reconstruct Interchange | 48,700 | 12,800 | 61,500 | 3 |
| 46 | STA | 99 | 1.4 | | | SR99 @ SR165 (Lander Ave) | | Modify Interchange | 35,000 | 9,000 | 44,000 | 3 |
| 47 | STA | 99 | R3.2 | R4.0 | 10-0F410K | West Main Street | | Reconstruct Interchange | 25,000 | 6,000 | 31,000 | 3 |
| 50 | STA | 99 | R11.3 | | 10-0E560K | Pine Street | | Reconstruct Interchange | 75,000 | 15,000 | 90,000 | 3 |
| 53 | STA | 99 | 14.9 | 15.6 | 10-0H770K | SR99 @ SR132 | Sr132 East | New Freeway to Freeway Interchange | 71,000 | 20,000 | 91,000 | 3 |
| 57 | STA | 99 | 19.9 | | | SR99 @ Standiford | | Modify Interchange | 80,000 | 20,000 | 100,000 | 3 |
| 60 | STA | 99 | R21.9 | R23.2 | 10-0L330K | Kiernan Avenue/SR219 | | Reconstruct Interchange | 50,000 | 12,000 | 62,000 | 3 |
| 61 | STA | 99 | 24 | 24.4 | 10-0L320K | Hammett Road | | Reconstruct Interchange | 68,000 | 20,000 | 88,000 | 3 |
| 64 | SJ | 99 | 16.4 | 17.5 | | Mariposa Rd. and Farmington | | Reconstruct and combine interchanges (stages 1 & 2) | 67,000 | 14,000 | 81,000 | 3 |
| 65 | SJ | 99 | 23.5 | 24.5 | 10-0L140K | Morada Lane in Stockton | | Reconstruct Interchange | 67,000 | 10,000 | 77,000 | 3 |
| 66 | SJ | 99 | 25.2 | 25.4 | 10-0L130K | Eight Mile Rd. in Stockton | | Reconstruct Interchange | 59,000 | 10,500 | 69,500 | 3 |
| | | | | | | | | | | TOTAL | 1,678,500 | |

## Figure 3.8 Priority Category 4: New Interchange Projects

| CATEGORY 4 NEW INTERCHANGES PROJECTS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Key Map Project Number | CO | RTE | PM | | EA | FROM | TO | PROJECT DESCRIPTION | Construction and R/W Capital Cost | Support Costs Estimated | Total Costs Per Project | Regional Priority Category |
| 2 | KER | 99 | 18 | 19 | 06-0C930K | Hoskings Road | | Construct New Interchange | 20,000 | 0 | 20,000 | 4 |
| 9 | TUL | 99 | 26.3 | 27.6 | 06-43040K | at Commercial Avenue | at Agri-Center | Construct New Interchange | 38,500 | 9,500 | 48,000 | 4 |
| 27 | FRE | 99 | 29.4 | | 06-36190K | Grantland Diagonal | | Construct Interchange | 55,000 | 13,800 | 68,800 | 4 |
| 33 | MAD | 99 | 12.3 | 14.3 | 06-48920K | Ellis Avenue Interchange | | Remove existing and Construct a new interchange | 88,500 | 18,500 | 107,000 | 4 |
| | | | | | | | | | | TOTAL | 243,800 | |

### 3.4.3 All Projects Map

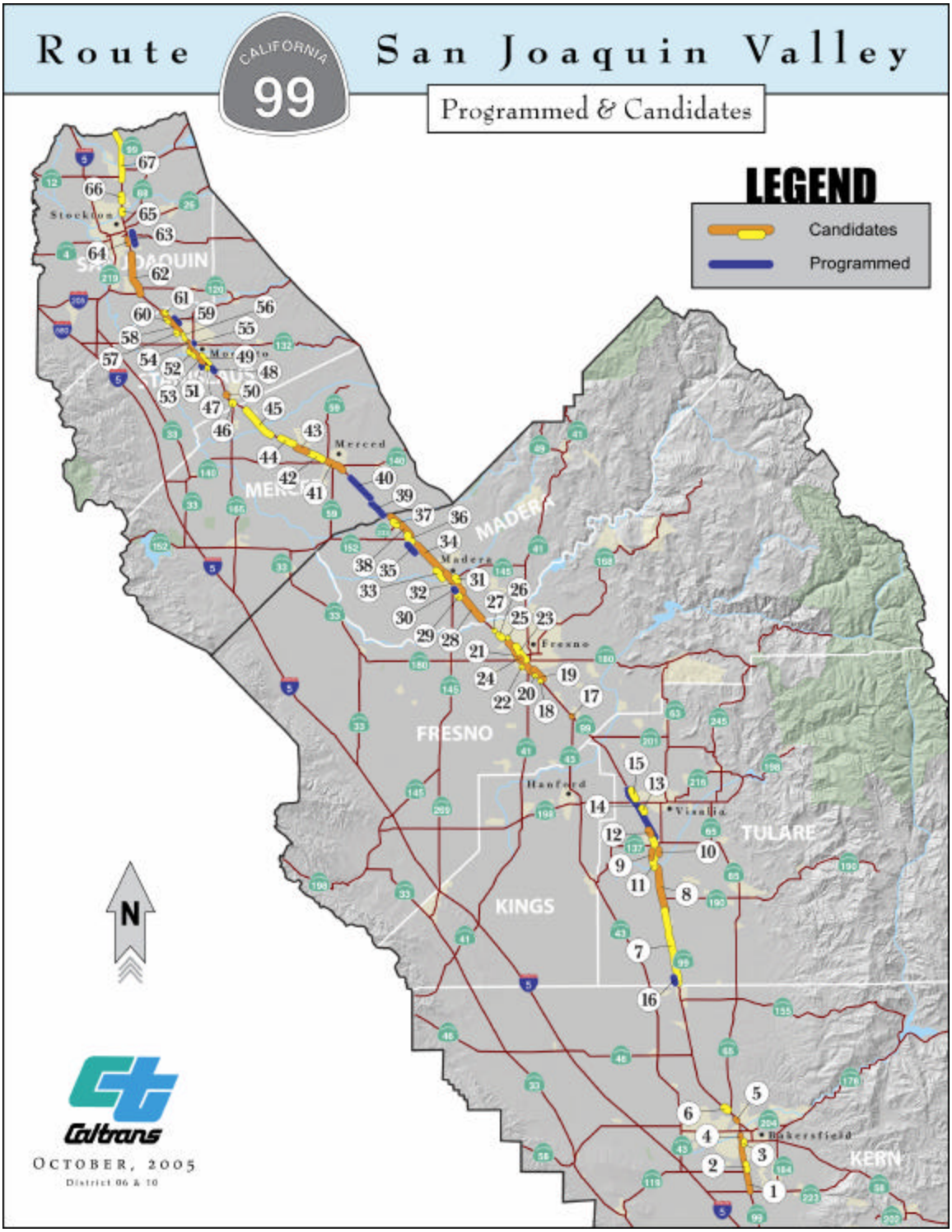



**Figure 3.9 Map of All Programmed and Candidate Projects**

## 3.5 Caltrans Design Standards: Background and Application Strategy

The American Association of State Highway and Transportation Officials (AASHTO) continually updates design guidelines for roads through the publication of *A Policy on the Geometric Design of Highway and Streets* (Green Book). These guidelines are created in cooperation with the Federal Highway Administration (FHWA) and State transportation agencies. The FHWA has adopted applicable parts of the Green Book as the national standard for roads on the National Highway System (NHS). NHS roads comprise all the Interstate system and some other primary routes. While not an Interstate, Route 99 is included in the NHS. Although the standards contained in the Green Book apply to the Interstate system, additional guidance applicable to the design of highways on the Interstate system is included in another AASHTO publication, *A Policy on Design Standards – Interstate System.* Caltrans typically adopts the guidelines established by AASHTO and incorporates them into the *Highway Design Manual* (Black Book). The Black Book then serves as the basis for design standards for all State highways in California, Interstate and non-Interstate.

While new standards are periodically adopted, it does not imply that existing standards or highways are unsafe, nor does it mandate the initiation of highway improvement projects to meet these new standards. It is industry practice to compare existing features to the new standards whenever a highway improvement project is proposed. Specific investigations, accident history, and engineering analysis often indicate that existing non-standard features are performing in a satisfactory manner. These findings are documented in a Design Exception Factsheet and retained in the project files. These design exceptions are critical for the defense of tort liability cases filed against the State.

The FHWA has mandated that design exceptions be justified for 13 controlling criteria on State freeways. The authority to approve design exceptions for these 13 criteria has been delegated to Caltrans for non-Interstate freeways; however, FHWA retains approval authority for these 13 criteria on Interstate highways. FHWA's 13 controlling criteria are the following: design speed, lane width, shoulder width, bridge width, horizontal alignment, vertical alignment, grade, stopping sight distance, cross slope, superelevation, horizontal clearance, vertical clearance, and bridge structural capacity. All but bridge structural capacity are geometric design criteria. This Business Plan has considered, at least at a high level, the compatibility of Route 99 with the 13 controlling criteria. Interchange spacing is an additional criteria included in *A Policy on Design Standards – Interstate System* that was not evaluated in detail, but is well known and discussed here briefly.

When considering the projects identified in this Business Plan, it is very difficult to generalize how each non-standard feature would be perpetuated or developed because these issues are

typically part of detailed engineering studies. For the purpose of this report, the following features are major issues that will be encountered along Route 99.

- Interchange spacing: Operational deficiencies in highly developed areas are typically driven by the weaving movements created at interchanges by merging traffic or queues from departing traffic. This is particularly true at freeway-to-freeway interchanges where high traffic volumes negatively interact with adjacent local-street interchange traffic movements. Removing adjacent local road interchanges, as the standard calls for, is complicated, as businesses are dependent on the access from adjacent interchanges. The interchange spacing standard is 1 mile for urban local road interchanges, 2 miles for freeway-to-freeway interchanges, and 2 miles for rural local road interchanges. The FHWA Interstate Freeway System Standard is 3 miles for rural interchange spacing.
- Right and Left Shoulders: Shoulders provide a safe refuge for disabled motorists, emergency personnel, and maintenance workers. The shoulder standard is 10 feet on 6-lane freeways (3 lanes in each direction). This standard is typically not achieved next to bridge supports or in urban areas where right-of-way impacts would be very expensive or disruptive to the community. Caltrans would not typically replace a bridge merely to widen shoulders so long as an unobstructed path for emergency vehicles could be established.
- Vertical Clearance to Bridges: Vertical clearance, the distance between the roadway and the bottom of the bridge, determines the vehicle height that can pass under a bridge. Non-standard vertical clearance is perpetuated when it can be shown that the structure is not a constraint in the movement of oversized loads or does not have a history of being hit by oversized loads. Bridges are rarely replaced for non-standard vertical clearance alone. The trucking industry desires greater oversized load capacity as it builds more plant-site fabricators. The magnitude of this type of improvement, however, is cost prohibitive.
- Horizontal Clearance to Fixed Objects: The distance between the traffic lanes and a fixed object is the horizontal clearance. The most prominent fixed objects are bridge rails, bridge supports, and concrete barriers. The minimum horizontal clearance is equivalent to the shoulder standards, which is 10 feet for a 6-lane freeway. This standard provides for the safe operations of the through lanes, emergency vehicles, and maintenance work.
- Lane Width: Although 12-foot lanes are standard, in some stringent existing conditions, 11-foot lanes may be justifiable. In this case, the inside (median) lane would be narrower. The wider lane on the outside provides more space for large vehicles that usually occupy that lane.
- Sight Distance (Caltrans and FHWA): Sight distance is the continuous length of highway visible ahead to the driver and is directly dependent on the design speed of the roadway. Two types of sight distance are considered on freeways: stopping and decision. Non-standard sight distance is common on older roadways and is caused by a number of factors. Vertical and horizontal curves, bridge abutments, and other objects can reduce sight distance. Non-standard sight distance may be perpetuated if there is no history of traffic collisions directly

attributed to the non-standard feature. It is foreseeable that the addition of lanes in the median and a concrete median barrier may obstruct sight distance and create a new non-standard condition. Each instance must be evaluated separately to determine an appropriate solution.

- Design Speed: Design speed is a speed selected to establish specific minimum geometric design elements such as horizontal and vertical alignments, and sight distance. It is very difficult to correct these features because it usually involves reconstruction and realignment of the freeway. These features are studied and typically perpetuated unless accident history analysis warrants otherwise. Design speed on a freeway facility like Route 99 is 70 to 80 miles per hour. The majority of Route 99 meets this standard.
- Horizontal and Vertical Alignment: These two alignments provide for the safe and continuous operation at a uniform design speed. These alignments are co-dependent on design speed and sight distance. Modification of these design elements typically requires major reconstruction, such as of the pavement, bridges, and alignment. Most, but not all, of Route 99 meets the current design standards.
- Grade: The Central San Joaquin Valley is flat and as such provides for compliance with the grade standards, which are maximum slope or roadway profile. Highway undercrossings (the local road going under the freeway) is the location where grade is typically not met, leading to the need to comply with the more significant standards of design speed and sight distance. If it can be shown that an accident history is not associated with non-standard sight distance, the grade is not typically corrected.
- Pavement Cross Slope: The pavement cross slope standard is a minimum standard for the purpose of storm water drainage. The cross slope standard is met in the existing facility at 1.5 percent and would be improved upon reconstruction to the current standard of 2 percent.
- Superelevation: Superelevation (roadway banking) is the pavement cross slope through a horizontal curve that improves safety and drivability. This design feature would be corrected with pavement reconstruction or as part of maintenance overlays. Much of the existing facility is standard or only slightly below standard.
- Bridge Width: The bridge width should be equal to the standard width of the lanes and shoulders (roadway), with no reduction between the bridge and the approach or departing roadway width. This is not true for many undercrossing bridges on Route 99. Narrow shoulders across bridges are common. Bridge width would be corrected with any lane addition project.

The above non-standard features will probably be commonplace along the entire route until major reconstruction or realignment occurs. In the absence of complete reconstruction, it is likely that most of these non-standard features will be perpetuated. Many new non-standard features will be created as lane addition projects attempt to fit within the existing roadway prism. Every reasonable effort should be made to not create non-standard features and to correct existing non-standard features when possible.

## 3.6 Interstate Designation Proposal

By act of recent legislation (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU, August 10, 2005 – Appendix C), Route 99 was designated a future part of the Interstate system. Under this condition, Route 99 shall become a part of the Interstate system at such time as the Secretary of the United States Department of Transportation determines that the segment: (1) meets the Interstate system design standards approved by the Secretary under section 109(b) of title 23, United States Code; and (2) connects to an existing Interstate system segment. As a result of this legislation and if the State of California decides to pursue the Interstate designation, Caltrans would be required to substantially complete construction of Route 99 to Interstate system standards within 25 years, or the designation of future Interstate system route could be removed.

If Route 99 were incorporated into the Interstate system, FHWA would become the agency with "Full Oversight" according to the stewardship agreement reached between Caltrans and FHWA. This means, for highway projects greater than one million dollars (not including resurfacing, rehabilitation, and restoration), FHWA would retain all federal approvals related to design and construction. Since Route 99 is a part of the National Highway System, Caltrans currently has been delegated authority for most engineering approvals during design and construction.

The FHWA has determined that the standards Caltrans has adopted in the *Highway Design Manual* substantially conform to the standards and policies set forth in publications from the American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, *A Policy on Design Standards-Interstate System*, and the *Roadside Design Guide*. When constructing new freeway segments, very few non-standard features are created, making any new facility predominately compliant with the Interstate system standards. Projects that modify the existing alignment will typically have many non-standard features.

It is important to note that given current funding constraints, Caltrans would continue to improve Route 99 without major reconstruction of existing features. Only existing features that are central to a specific project's need and purpose would be corrected, leaving many existing non-standard features remaining in place. The engineering studies needed to determine that an existing feature is performing satisfactorily are common to both Caltrans and FHWA. If the route were designated as an Interstate, FHWA would assume authority of the Design Exception process. FHWA oversight would result in another level of review and it is expected that the approval process would make each project more costly and less timely.

At this time, it is unclear how the existing non-standard features on Route 99 would be treated if it were to be added to the Interstate system. Clearly, if that change occurred, FHWA would

assume approval authority for any future non-standard features. What is not as clear is what would become of the existing non-standard features on the route. It appears existing regulations give FHWA little latitude, in that they indicate any additions to the Interstate system must be brought up to standard before inclusion. The regulations do make a "provisional" Interstate designation available, provided the facility is brought up to Interstate standards within 25 years. Caltrans is continuing to negotiate this issue with FHWA to determine what, if any, latitude they have for allowing the route into the Interstate system without it being upgraded to full standards. If full standards are required by FHWA to include Route 99 in the Interstate system, Caltrans estimates the cost would be an additional $14 to 19 billion over the $6 billion identified to achieve the goals in this plan.

## 3.7 State Highway Operations Preservation Plan Strategy

The safety, mobility, and preservation needs of Route 99 are addressed by the State Highway Operations and Protection Program (SHOPP). Projects from the SHOPP would be based on the priority needs of the State Highway, and would be coordinated with the State Transportation Improvement Program (STIP).

SHOPP projects on Route 99 would maintain or improve the condition, safety, and operation of the highway, and protect the investment that has been made on the facility. The SHOPP program includes six types of projects that would affect Route 99:

- Collision Reduction
- Roadway Preservation
- Bridge Preservation
- Roadside Preservation
- Mobility Improvements
- Mandates (storm water requirements and emergency type projects)

In each of these categories, the projects would compete for available dollars with other projects statewide. As an example, roadway preservation projects would be prioritized on a statewide basis by pavement condition, volumes of traffic, type of facility (freeway, expressway, highway), and amount of truck traffic, and then be funded based on this prioritization.

Safety improvements that meet a certain threshold of benefit-cost criteria are funded off the top of the SHOPP before other needs are addressed. They do not need to compete for funding on a statewide basis.

This Business Plan is built on the assumption that the SHOPP is adequately funded to meet the needs described previously. However, this is not an accurate assumption. Statewide, the SHOPP needs are estimated to be in excess of $30 billion for the next 10 years, while the revenues

projected for that same period are approximately $20 billion. It is estimated that the 10-year SHOPP needs for this segment of Route 99 are $376 million. While beyond the scope of this Business Plan, adequate SHOPP funding is necessary to ensure that the route is adequately maintained and operated.

## 3.8 Long-Life Pavement Strategy

Pavement service life is the period of time that pavement is intended to last before requiring major rehabilitation or reconstruction. Long-life pavement has an intended service life of not less than 40 years. This is double the original design life of the concrete pavements on Route 99, which was the standard until just a few years ago.

The single most important criterion for the use of long-life pavement is the projected truck traffic expected to occur during the pavement service life. Passenger cars, pickups, and two-axle trucks are considered to have a negligible affect on pavement life.

In June 2003, with the 5th edition of the *Highway Design Manual*, Caltrans established the provisions for the use of long-life pavement on new construction and reconstruction projects. Long-life pavements are subject to a life cycle cost analysis, where the economic viability of long-life pavement is financially determined. Long-life pavement should be used when either of the following criteria is met:

- The projected or future Annual Average Daily Traffic (AADT) 20 years after completion of construction equals or exceeds 150,000.
- The projected or future Annual Average Daily Truck Traffic (AADTT) will equal or exceed 15,000 trucks 20 years after completion of construction.

The AADT and AADTT on Route 99 are provided in Figure 3.10 for each county. The traffic volumes are presented in broad ranges as traffic volumes vary within county limits.



**Figure 3.10 Annual Average Daily Traffic and Truck Traffic**

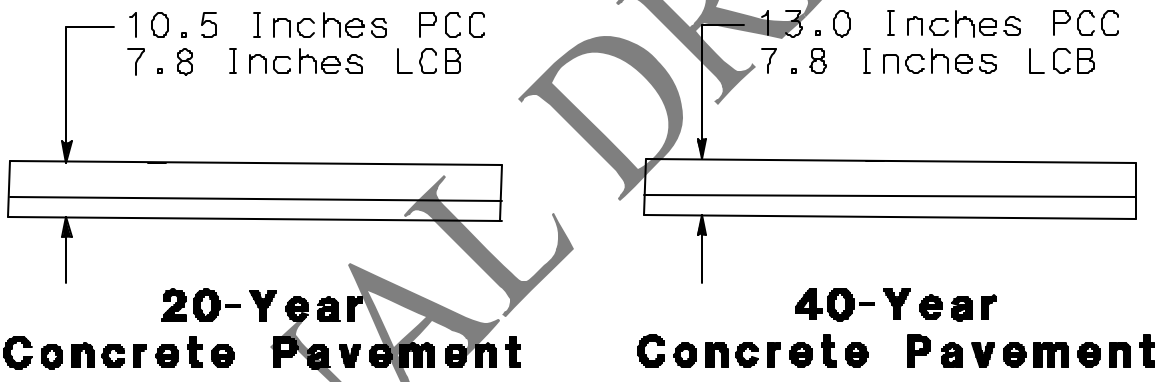
| County | 2005 AADTT | 2025 AADTT | 2005 AADT | 2025 AADT |
|---|---|---|---|---|
| Kern | 26,000 | **57,000** | 80,000 to 100,000 | **175,000 to 220,000** |
| Tulare | 13,000 | **24,000** | 45,000 to 50,000 | 84,000 to 94,000 |
| Fresno | 17,600 | **36,000** | 70,000 to 90,000 | **144,000 to 185,000** |
| Madera | 12,000 | **36,000** | 45,000 to 50,000 | 133,000 to 148,000 |
| Merced | 11,000 | **20,000** | 42,000 to 58,000 | 80,000 to 100,000 |
| Stanislaus | 15,000 | **32,000** | 70,000 to 125,000 | **200,000 to 260,000** |
| San Joaquin | 12,000 | **28,000** | 80,000 to 110,000 | **170,000 to 260,000** |

*Source: Caltrans, District 6 and 10 Transportation Planning Branch data. Bold type indicates traffic volumes that would qualify for long-life pavement.*

As the above table shows, every county qualifies for long-life pavement. When the qualifying element is truck traffic (AADTT), then only truck lanes warrant the long-life pavement. When the AADT is greater than 150,000, as it will be in most counties, the non-truck lanes also qualify for long-life pavement.

The above guidelines are relatively simple to implement on new construction or full reconstruction. When adding lanes to an existing facility, however, a whole host of issues determines the feasibility of following the above guidelines. By way of example, one issue of concern is the remaining service life of the adjacent pavement and whether the existing concrete pavement has been overlaid with asphalt. This report cannot address this issue or the myriad of other issues that arise when considering long-life pavement on widening projects.

The cost for long-life pavement can at times be not much more than regular 20-year life concrete pavement. The cross sections below depict a long-life pavement and a 20-year concrete pavement. The Portland cement concrete (PCC) and lean concrete base (LCB) depths would be unique for each project and are presented for comparative purposes only.




The cost difference for the concrete pavement is approximately $25 per lineal foot of lane—considering structural elements only.

At this time, Caltrans has not had sufficient funding to fully implement long-life pavement strategies. While the focus of this Business Plan is on the safety, capacity, and operations of Route 99, implementation of a long-life pavement strategy for the route is a necessary element to ensure long-term performance of the route. For new construction, this strategy will be relatively easy in that new pavements will be built to long-life standards. The problem of how to deal with the existing pavements on reconstruction projects, especially with how to fund them, remains. District 6 and District 10 will be working with Headquarters to develop a comprehensive long-life pavement strategy for the route.

## 3.9 Median Barrier Strategy

Median barriers are used on divided highways to reduce the risk of an out-of-control vehicle crossing the median and colliding with opposing traffic. The standard types of median barriers for new installation are concrete safety-shaped barriers and metal thrie-beam barriers. Temporary barriers (Type K) may be used under certain conditions. These three types of median barriers are capable of preventing nearly all cross-median accidents.

Caltrans devotes great attention to median barriers and is continually reviewing the criteria and aggressively developing projects for placement and replacement of these barriers. Within the limits of this Business Plan, Caltrans has identified 59 miles of locations where median barriers may be needed. Of these 59 miles, 22 miles of median barriers will be constructed by currently programmed projects (STIP and SHOPP). Roughly $40 million will need to be programmed in future years to construct median barriers for the remaining 37 miles.

## 3.10 Intelligent Transportation System Strategies

Caltrans and its regional and local partners recognize that addressing congestion requires a multi-pronged approach that includes: adding new capacity, maintaining infrastructure, investing in and encouraging the use of alternate modes such as transit and rail, and using transportation management systems (TMS) and strategies.

Intelligent Transportation Systems (ITS) is a recognized strategy for improving the operation and efficiency of the transportation system. When integrated into the transportation system infrastructure, and in vehicles themselves, these technologies help monitor and manage traffic flow, reduce congestion, provide alternate routes to travelers, enhance productivity, and save lives, time, and money.

Intelligent transportation systems provide the tools for skilled transportation professionals to collect, analyze, and archive data about the performance of the system during the hours of peak use. Having this data enhances traffic operators' ability to respond to incidents, adverse weather, or other capacity-constricting events.

Traffic accidents and congestion take a heavy toll in lives, lost productivity, and wasted energy. ITS enables people and goods to move more safely and efficiently through a state-of-the-art, intermodal transportation system. The primary goal of the Traffic Management Centers (TMC) in Fresno and Stockton are to continually monitor traffic flow on the State Highway/Freeway system to facilitate a timely and appropriate response to unusual conditions that could adversely affect traffic or create a potentially hazardous situation. By using ITS and TMS strategies, Caltrans is better able to:

- Expedite the removal of major incidents to prevent secondary incidents and reduce delay.
- Control traffic demand and optimize the balanced usage of the regional transportation system.
- Facilitate the dissemination of transportation and traffic information to the traveling public.
- Provide a central hub for special event and emergency operations.
- Facilitate coordinated district communication services.
- Monitor and facilitate the coordination of planned lane closures.

The following table outlines the ITS elements planned for Route 99.

| Proposed Investment Along Route 99 | | | |
|---|---|---|---|
| | # | Each | Total |
| Closed Circuit TV | 141 | $ 60,000 | $ 8,460,000 |
| Changeable Message Sign | 63 | $ 135,000 | $ 8,505,000 |
| Ramp Metering System | 40 | $ 50,000 | $ 2,000,000 |
| Traffic Monitoring System | 128 | $ 30,000 | $ 3,840,000 |
| Highway Advisory Radio | 10 | $ 30,000 | $ 300,000 |
| Weather Information Systems | 31 | $ 50,000 | $ 1,550,000 |
| Fiber Optic Systems in miles | 139 | $ 200,000 | $ 27,800,000 |
| Central Control System | 1 | $ 500,000 | $ 500,000 |
| | | | |
| **Total Proposed Investment** | | | $ 52,955,000 |

ITS elements have historically been funded from the SHOPP; however, as SHOPP funding is inadequate to meet its many needs, it is important to consider funding these elements from the STIP or other funding sources. The SHOPP will continue to play a role, but by partnering with other funding sources, incorporation of these elements into the corridor becomes more achievable.

## 3.11 Land Use Strategy

Land use decisions along the Route 99 corridor directly affect existing and future operation of the route as well as the local road circulation system. Route 99 is recognized as the primary north-south travel artery to access the population centers of the San Joaquin Valley. It is essential that the safety and operation of Route 99 be considered when General Plans and Circulation Elements are updated and more specifically, when individual land use decisions are made by local agencies. San Joaquin Valley MPO staff members recognize the importance of land use decisions and have noted the need for a stronger coordination of local land use decisions with the needs on Route 99.

Coordination with local agency General Plan and Specific Plan updates to incorporate elements of this Business Plan and the Route 99 Corridor Enhancement Master Plan are essential so their mission and objectives become part of community goals and objectives when land use decisions are being considered. This provides input during the initial planning and review of these critical

documents, which in most cases make up the direction of anticipated growth and concentrated development along Route 99.

The land use strategy for the Route 99 corridor includes several elements, which will become more effective with stronger collaboration. Descriptions of these strategy elements are shown below:

- Collaboration: First, establish interagency collaboration procedures between Caltrans, local agencies, and MPOs when development projects are initially proposed and continue them as projects proceed through the local approval process. Local agencies should bring Caltrans into the land use and development proposal process at the earliest point possible for consultation and review. Caltrans should work cooperatively with local agencies as land uses and development proposals are initiated adjacent to Route 99. The adoption of updated general plans/specific plans is the most critical point for protecting State facilities, but an ongoing project-by-project collaborative effort is also needed.

- Corridor preservation: Caltrans and local agencies should work together to establish plan lines and interchange "footprints" so local agencies can apply their land-use authority toward preserving the necessary right-of-way for the corridor. Working with local jurisdictions, Caltrans should seek to have plan lines adopted into General Plan circulation elements. Caltrans and local agencies could work together to update the local circulation elements as they pertain to Route 99. The goal is to use local agency land-use authority in the preservation of the corridor and to accelerate the necessary environmental clearances. Caltrans and local agencies will work together to develop appropriate mainline and interchange footprints.

- Development Funding: There is recognition that the development community has a role toward funding a fair share of impacts to Route 99. Caltrans and local agencies should work together toward agreement on policies that address appropriate developer funding responsibility. The development community has a role in participating in the funding of mainline improvement needs as well as interchange needs of Route 99. This would be a fair share based upon analysis of direct impacts attributable to each new development. As an example, this could take the form of direct financial contribution, right-of-way dedication, or participation in a local or regional development fee program. These are details that will need to be refined on a local agency-by-agency basis.

- Enhance Corridor Appearance: Improve the appearance of the Route 99 corridor through local agency acceptance of the *Route 99 Corridor Enhancement Master Plan.* Local planning documents can be enhanced by applying the goals and strategies of the Master Plan, which support enhancing the appearance of roadway elements and the surrounding view. Local

agency acceptance and application of these strategies is important to improving Route 99's appearance.

## 3.12 Landscaping Strategy

As discussed in Section 2.2.4, two types of planting have occurred along the route—"Functional Planting" and "Highway Planting." The roadsides along the Route 99 corridor are a mix of these two planting types.

**Functional Planting**

"Functional Planting" is visible between communities along the rural segments of the Route 99 corridor. As the name indicates, "Functional Planting" is utilitarian and made up most of the original planting along the length of the corridor. These original plantings were comprised of mostly eucalyptus trees used to help delineate the route and identify structures or curves, and oleander shrubs used to provide a median headlight or glare screen. The purpose of the screen was to shield the driver's eyes at night from the tiring effect of the headlights of oncoming cars. The median oleander planting has come to symbolize Route 99. The trees also help to give some change and variety to the scene in the long stretches of rural freeway. Ground cover vegetation along the rural segments is comprised predominantly of non-native grasses, planted as erosion control during the roadway construction process.

Time and roadway construction have taken a toll on the original "Functional Planting" along the corridor. The once consistent pattern of tree groupings has been removed in areas by numerous construction projects along the corridor. Many trees have been removed as the roadway encroaches further into the right-of-way, leaving the trees too close for safety. In addition, the trees are reaching the end of their life span and have been affected by environmental conditions, disease, drought, and freeze. Some have died and been removed, and many others are no longer healthy and thriving.

The median oleander planting has experienced a similar fate. In recent years, many miles of this signature element have been removed by roadway construction projects. Many more miles have been identified for removal, to make way for additional lanes of traffic and concrete median barriers.

When existing planting is removed for roadway construction projects, "Replacement Planting" is identified and funded by these projects. This replacement planting has most often been installed closer to the urban areas, extending the existing "Highway Planting" area. The medians and rural roadsides are not replanted. The rural areas are quickly losing these signature landscape elements.

**Highway Planting**

Throughout the corridor, "Highway Planting" signifies the roadsides in the urban areas. "Highway Planting" goes beyond pure function. It improves aesthetics and makes the roadway more compatible with the surrounding urban environment of neighborhoods and businesses. Highway planting includes trees, shrubs, and groundcovers with automatic irrigation systems. This landscaping helps to blend the right-of-way into the adjacent community. Although aesthetic in nature, this landscape also serves many functional purposes, such as controlling dust and erosion, providing fire and weed control, delineating the route, and providing headlight screening. Planting is also used to screen objectionable views of adjacent properties, as well as to screen the roadway from the community.

A variety of ornamental and California native plants are used in the landscape. The plants used on the Central Valley roadsides must satisfy very difficult requirements. The plant material must be drought tolerant, adaptable to difficult and varying soil conditions, able to take heat and exhaust fumes, and must require minimal maintenance.

The portions of the route that have "Highway Planting" areas are designated as "Landscaped Freeway." This designation is given to a section of freeway as a means to help regulate the installation of outdoor advertising displays, or "Billboards" (as defined in Chapter 6, Title 4, of the California Code of Regulations).



**Highway Planting Strategy**

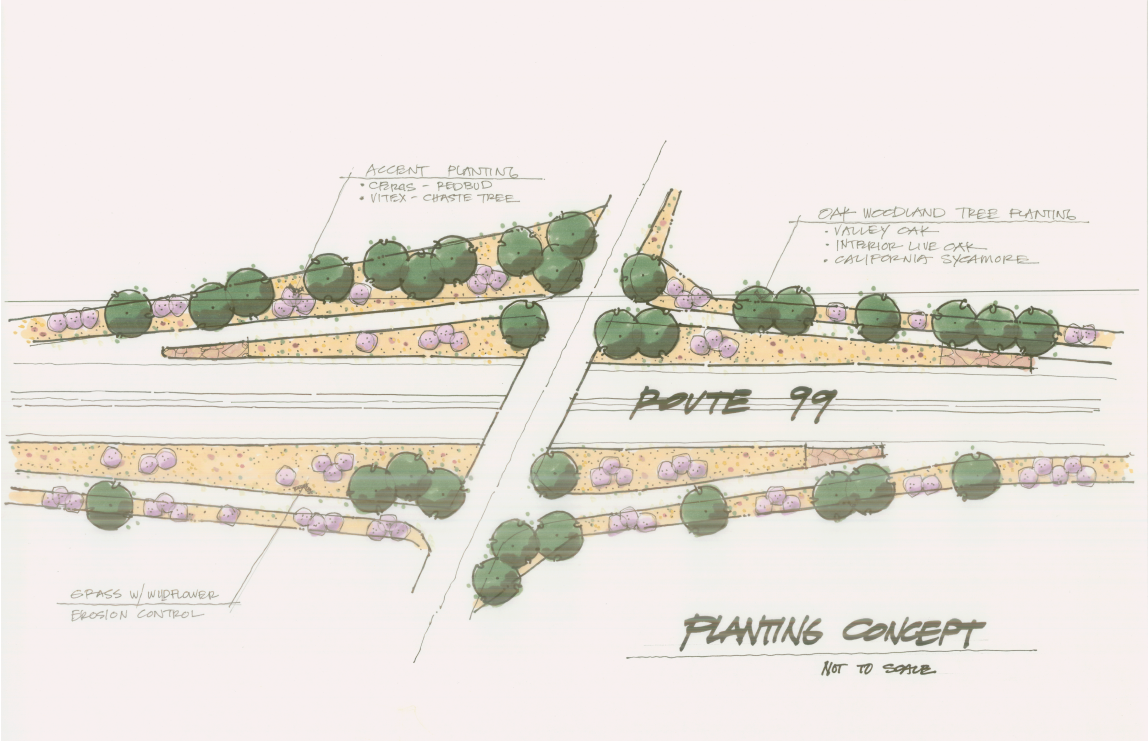



**Figure 3.11 Artwork of Highway Planting Concept**

There are current and future plans to rehabilitate existing "Highway Planting" areas along the corridor. These areas are beyond their intended life span and have fallen into disrepair, creating voids in the landscape. Projects have been identified to rehabilitate these areas; many of these projects have been programmed and some have been completed. With these rehabilitation projects, the aged irrigation systems will be replaced or updated, and the landscapes will be rejuvenated.

With new construction projects, native oaks, the corridor theme tree, are being incorporated into the landscape. See Figure 3.11. This will help tie the rural and urban landscapes together. Like the eucalyptus trees of old, the oak theme is designed to create the corridor feeling for the entire stretch of freeway.

## 3.13 Safety Roadside Rest Areas

In 2000, a "Caltrans Safety Roadside Rest Area System Master Plan" was approved. Caltrans placed a priority on identifying new rest area sites that best address the trucking industry needs for safe stopping and rest. This Master Plan identified five new sites for the Route 99 corridor (see Figure 3.12). If completed, this would help to alleviate the current shortage.

The existing Safety Roadside Rest Areas (SRRA) are in need of major renovation and upgrading to sustain the high levels of use and to comply with requirements of the Americans with Disabilities Act (ADA). The renovation of Enoch Christofferson is complete and the C. H. Warlow facility will be ready for construction in early 2006. The rehabilitation of Phillip S. Raine is a candidate for the 2006 SHOPP.

The development of new SRRA's is to be achieved through solicitation of a joint-development, privatized effort. It is hoped that through this process, public funding can be leveraged to maximize the availability and quality of safe roadside stopping opportunities. Caltrans' provision for rest stops promotes traffic safety and serves Caltrans goal to promote efficient goods movement for California's economic vitality.


**Figure 3.12 Route 99 Safety Roadside Rest Areas**

### 3.13.1 Driving toward a Sustainable Future; A GreenStop for California's Central Valley

The Great Valley Center (GVC) is in the process of conducting a design competition to develop a prototype rest area on Route 99. The design site being used is the Phillip S. Raine SRRA near Tipton in Tulare County. The purpose of the competition is to design a self-sustainable and solar-powered roadside "GreenStop." The GVC has garnered support from Caltrans and other private organizations as partners in this effort. The sponsors view this as a unique opportunity to create a "green" rest area that is regionally relevant for the San Joaquin Valley, and that provides an image and identity reflecting this region of California's Central Valley.

While this competition is site specific, the goal of this competition will be to serve as a pilot project, creating a new model that could be replicated elsewhere in the State. The competition will address the redevelopment of the existing rest area, and will include interpretive elements that provide opportunities for visitors to better understand the unique qualities and products of the region.

The objective of the project is to set a standard of excellence for roadside rest areas. Goals include the following:

- Develop innovative and creative design solutions that demonstrate a greenstop—a rest area that is truly sustainable in terms of wastewater uses, recycling, and other operations to ensure a "zero footprint" on the environment.
- Create designs that are "off the power grid" and meet the higher Leadership in Energy and Environmental Design (LEED) levels of Silver, Gold, or Platinum.
- Reflect the context of the region and include opportunities that highlight regional features.
- Establish a theme that reflects the Route 99 corridor.
- Develop plans that provide "escapes" from the freeway environment.
- Provide safe and secure environments for all users.
- Appropriately accommodate the needs of multiple users.
- Address 24/7 uses.
- Follow CALTRANS and FHWA guidelines; be ADA and Cal OSHA compliant.
- Address the cost effectiveness and benefits of the design.
- Provide traditional rest area facilities (e.g. rest rooms, picnic areas, etc.).
- Ensure a maintenance friendly facility.
- Serve as a site-specific pilot project that can be replicated in other areas.

The competition will be conducted from early January through mid-April 2006.

### 3.13.2 Route 99 Roadside Rest Area Wireless Internet and Information Kiosks

Caltrans is joining the Great Valley Center and its private partner, Coach Connect Corporation, in a public/nonprofit partnership to build a pilot project at two Route 99 rest areas. The pilot project will install value-added telecommunications and traveler-related public information kiosks at both the Philip S. Raine SRRA and Enoch Christoffersen SRRA on Route 99 in Tulare and Stanislaus counties, respectively.

Value-added communications are wireless Internet connections (Wi-Fi hotspots) via satellite or copper wire. Access points and antennae distribute the Internet signal across a specific radius. These signals are received by hardware installed in laptop computers, personal data assistants, and cell phones within the specific radius. Travelers are becoming accustomed to and requesting Internet access whenever and wherever they stop. There is an increase in the number of business travelers driving California highways, thereby increasing the demand for Wi-Fi hotspots on their trips. The pilot project will install Wi-Fi hotspots at both rest areas.

The project will also install information kiosks at both rest areas. The purpose of these kiosks is to provide Internet based traveler-related information to the public. The traveler information will include current transportation information such as road conditions, closures, etc. Other travel information (destinations, parks, museums, etc.) which promotes local area tourism, natural resources, cultural resources, and historic resources will also be available to the public on these information kiosks. This same traveler information will also be available through the wireless Internet Wi-Fi hotspot system.

The pilot project is currently in the development phase. Installation is expected to be completed in early 2006. The project is planned to be a prototype two-year project that will be evaluated for potential continuation and expansion to other rest areas in California.

## 3.14 Environmental Strategies

Route 99 is the transportation backbone of the San Joaquin Valley, as well as many of the Valley communities it passes through. As projects are developed, the typical process for public involvement is on a project-by-project basis with public information meetings being held where the public or interest groups are invited to attend and provide comments on the project. An innovative way to improve communication and public participation with local partners along Route 99 would be to develop a systematic regional approach to public participation. This would include holding public information meetings early in the process in various locations along the route, which would benefit the public and streamline the process in several ways:

- Identify and involve stakeholders early in the process.
- Identify issues.
- Provide the opportunity for conflict resolution.
- Improve communication and partnerships efforts.
- Expedite the environmental review process.

Route 99 bisects a variety of habitats such as grasslands, vernal pool complexes, riparian corridors, wetlands, and agricultural lands. These areas provide potential habitat for many state and federal protected species including, but not limited to, San Joaquin kit fox, California tiger salamander, vernal pool fairy shrimp, Swainson's hawk, and valley elderberry longhorn beetle.

When viewing the entire Route 99 corridor, the opportunity presents itself to make some advances in mitigation strategy and implementation. From the perspective of strategy, the benefits could be immediate and have the potential to decrease project costs and expedite project delivery. From the perspective of implementation, the possibility exists to significantly improve the environment along the corridor. Through some relatively minor alterations to project scope, the ecological payoff could be great over a long period of time.

### 3.14.1 "Pooled" Mitigation Funds

Each of the projects in the Business Plan will likely require species mitigation. Typical mitigation for these projects would occur on a project-by-project basis including acquiring a multitude of separate mitigation sites, which is usually expensive. An innovative approach early in the project delivery process focused on regional efforts to preserve and maintain large tracts of habitat with multi-species values would enhance and expedite the environmental process. By establishing a Memorandum of Understanding with federal and State agencies, the U.S. Fish and Wildlife Service, Federal Highway Administration, U.S. Army Corps of Engineers, Environmental Protection Agency, and Caltrans would allow the opportunity for early negotiation and agreements to be reached on mitigation for the Route 99 corridor. Mitigation ratios for plant and animal species, including habitat, could be established and location of replacement habitat could be determined early. It would be possible to set up a few large mitigation sites logically dispersed along Route 99. These mitigation sites would be established based on specific anticipated needs for species mitigation in that particular geographic area.

For example, a multiple project mitigation site could be set up in Madera County to mitigate for projects in Fresno, Madera, and Merced counties. At a minimum, 3 to 5 mitigation sites could be set up between the cities of Bakersfield and Stockton to address effects to special-status species. This effort could benefit the corridor in several ways:

- Increase quality of mitigation sites and provide better species protection.
- Reduce mitigation costs.

- Reduce acquisition efforts.
- Reduce agency consultation timelines.
- Expedite project delivery.

### 3.14.2 Enhancement by Design

Another opportunity to address possible environmental concerns lies in the design of the projects themselves. Major roads and associated features may restrict animal movements and consequently reduce genetic diversity, dispersal, and the resilience of animal populations. This has been a focus in recent years and many examples can be identified, including those found in current documents filed with the United States Fish and Wildlife Service and the California Department of Fish and Game. Maintaining habitat connectivity is identified as a primary recovery action for San Joaquin kit fox in the "Recovery Plan for Upland Species of the San Joaquin Valley, California." When feasible, wildlife crossings should be considered early during the project development phase. Examples of elements that could be included in the project design to improve habitat connectivity are:

- Methods to eliminate aquatic passage barriers
- Wildlife crossings via properly placed large box culverts
- Wide riparian corridors (i.e. longer bridges)

## 3.15 Performance Measures

In order to better analyze proposed projects quantitatively, Caltrans has developed the Transportation System Performance Measures. They should be used to monitor existing performance, forecast future performance, build consensus decision-making information, provide and share modal-neutral customer information, and improve accountability. Working toward this end, Caltrans identified six Performance Measures to categorize the data collected under various scenarios for the District 6 and District 10 project lists. The Performance Measures categories are:

- Safety
- Mobility
- Reliability
- Productivity
- System Performance
- Return on Investment-Life Cycle Cost

The scores for each project are shown in Appendix B under the respective Performance Measure tables in Figures B.1 and B.3 (for District 6) and Figures B.2 and B.4 (for District 10). For example, data collected such as the "Annual Daily Vehicle Trips" or "Level of Service" is used to measure Productivity. The categories are also broken down to provide before and after

construction analysis. Performance Improvement Indicators are assigned for each criterion, which illustrate the degree of improvement for the facility after construction. For the Productivity performance measurement the score assigned is either Yes or No (Yes, the proposed facility will meet the LOS target, or No, it will not). For the criteria: Safety, Mobility, Reliability, and System Performance, scores of High, Medium, and Low are assigned. As an example, each project's safety score is determined as follows:

- LOW – Accident rate lower or equal to the expected rate
- MEDIUM – Accident rate less than one and one-half times the expected rate
- HIGH – Accident rate more than one and one-half the expected rate

Accident information for the Safety measure post-construction was not obtainable. Certain specific information for interchange improvement projects was not obtainable and is therefore shown as "Not Applicable" or N/A. In addition, the "Benefit-Cost Ratio" data under "Return on Investment/Life Cycle Cost" will be derived soon, but is not currently available.

## 3.16 Funding for Route 99 Projects

SAFETEA-LU is the Federal transportation act that will fund $286.4[4] billion of transportation investments. Within this amount, $18.4 million has been allocated for Route 99 projects. A list of projects with earmark funding is in Appendix D. These earmarks only provide partial funding for the projects listed leaving the remaining balance to be funded from other sources.

In California, most State Highway System improvements are programmed through two documents, the State Transportation Improvement Program (STIP) or the State Highway Operation and Protection Program (SHOPP). State and federal fuel taxes generate most of the funds used to pay for these improvements. Funds expected to be available for transportation improvements are identified through a Fund Estimate prepared by Caltrans and adopted by the California Transportation Commission (CTC). These funds, along with other fund sources, are deposited in the State Highway Account to be programmed and allocated to specific project improvements in both the STIP and SHOPP by the CTC.

The STIP is built from Regional Transportation Improvement Programs (RTIPs) proposed by Regional Transportation Planning Agencies (RTPAs/MPOs) throughout California and the Interregional Transportation Improvement Program (ITIP) proposed by Caltrans. Of the funds made available by the CTC for the STIP, 25 percent is made available for Caltrans to propose expansion and capacity-enhancing improvements on the statutorily designated Interregional Road

[4] Total funding in SAFETEA-LU is $286.4 billion. However, only five years remain in this six-year bill. The funding for the remaining five years is $244.1 billion.

System. Seventy-five percent of the funds are made available to RTPAs/MPOs to propose all types of improvements on all other State Highway System roads, other non-State highway roads eligible to use federal funds, and on the Interregional Road System.

The SHOPP programs safety, rehabilitation, traffic management and operational improvements, and roadside rehabilitation (appearance) projects on the State Highway System. Caltrans, in cooperation with RTPAs/MPOs, identifies projects directed at responding to safety needs and protecting the multi-billion dollar investment in the existing highway system.

Transportation funds generally come from the following sources:

- State fuel taxes
- Federal fuel taxes
- Sales taxes on fuel
- Truck weight fees
- Roadway and bridge tolls
- User fares
- Local sales tax measures
- Development mitigation fees
- Bonds
- State and local general funds

Most of these funds are targeted for specific transportation purposes and are made available based on specific use or criteria through designated programs. Appendix C contains a chart that lists the most common programs that fund Route 99 highway improvements.

Typical categorical funding programs used for Route 99 are:

- National Highway System: Federal funding program for major interregional highways of national significance. This is the primary federal funding program for Route 99 route expansion and rehabilitation.
- Bridge Replacement/Rehabilitation Program (HBRR): Under this program, bridges are nominated by local agencies and selected from the Division of Structures Eligible Bridge List.
- Transportation Enhancement (TE) Program: This is a competitive grant program to fund environmental and alternative transportation projects that enhance the transportation system. There are target fund levels for RTPAs/MPOs and Caltrans to propose projects.
- Hazard Elimination and Safety Program (HES): For Route 99, this would fund highway safety improvement projects on the federal-aid system.
- Traffic Congestion Relief Program: This is a State funded program generated from the sales tax on fuel, which can be used for any type of transportation improvement. Existing projects

were created by State legislation. At this time, it is unknown whether new projects will be selected by legislation or through the STIP process.

- Local Sales Tax Measure: This is a local sales tax for transportation purposes that must be voted on by local voters. Examples of this in the San Joaquin Valley include Fresno, Madera, and San Joaquin County Local Sales Tax Measures.
- Developer Impact Fees: This is a local source levied on development within a specific jurisdiction that may be used for transportation purposes.

If Route 99 is designated as an Interstate in the future, it will be eligible for Interstate maintenance funding. No additional funding would come to California, however, because if the Interstate maintenance mileage increases, the National Highway System mileage would be reduced by an equivalent amount.

### 3.16.1 Innovative Financing

*Go California*, recently introduced by the Business, Transportation and Housing Agency, announced California's transportation program targeted to improve mobility and accessibility throughout the State. Included in *Go California* is the use of innovative financing mechanisms that can help fund and advance important transportation system improvements.

Federal Highway Administration publications define innovative finance as:

> *"Innovative Finance for transportation is a broadly defined term that encompasses a combination of specially designed techniques that supplement traditional highway financing methods. While many of these techniques may not be new to other sectors, their application to transportation is innovative."*

Innovative finance techniques essentially fall into one of two categories; accessing new non-traditional resources, or some form of managed financing of fund resources. These innovative finance techniques fall into four classifications:

- Innovative management of Federal funds
- Debt financing
- Credit assistance
- Highway tolls

Innovative Management of Federal Funds: This strategy consists of several specific programs including Advance Construction, Tapered Non-federal Match, Flexible Match, and Toll Credits.

Advance Construction allows a state to initiate a project using non-federal funds while preserving eligibility for future use of federal funds. This would allow California to move projects on Route 99 forward even if the annual federal obligation authority is insufficient to begin the project.

Tapered Non-federal Match allows the match to be varied across the several project phases over the life of the project. This is allowable as long as the total federal contribution does not exceed the specified federal participation limit. On a typical 80 percent federal, 20 percent non-federal project, the preliminary engineering through design could be 100 percent federal and 0 percent non-federal match. At the construction phase, the required dollar amount of non-federal match for the total project would then be committed, but typically this would be several years after the project is initiated. When non-federal funds are in short supply this would avoid a delay to project initiation.

Flexible Match allows a project sponsor to use non-federal match sources other than traditional cash. The source of the match could be public donations of cash, right-of-way, or materials and services.

Toll Credits is a provision in federal law applicable to toll roads. This could be applicable to Route 99 if it were to become a toll road. Through this technique, the State could request that tolls collected on a State highway be used as the non-federal match for projects.

Debt Financing: Provisions of this program allow bond financing if there is a source of ongoing funding to retire the bonds. California has used this technique through GARVEE bonds. Use of GARVEE funding would allow projects to move to construction sooner than the traditional pay-as-you-go approach. It would require a long-term, up to 15 years, multi-year annual commitment to retire the debt. This is a technique that could be used to finance projects on Route 99.

Credit Assistance: This program allows the use of federal funds for a public or private project sponsor to better access credit for transportation projects. Federal credit assistance can take one of two forms; loans, where a project sponsor borrows federal highway funds directly from a state or the federal government; and credit enhancement, where a state or the federal government makes federal funds available on a contingent (or standby) basis. Credit enhancement helps reduce risk to investors and thus allows the project sponsor to borrow at lower interest rates. Loans can provide the capital necessary to proceed with a project or reduce the amount of capital borrowed from other sources. Credit Assistance consists of three primary techniques; Section 129 of Title 23 Loans, State Infrastructure Banks, and the Transportation Infrastructure Finance and Innovation Act (TIFIA).

Section 129 loans allow California to use regular federal-aid highway revenues to fund direct loans to projects with dedicated revenue streams such as toll facilities. The State Infrastructure Bank allows the use of regular federal-aid highway and State funds to offer loans or credit enhancement to both public and private project sponsors. TIFIA provides for direct loans, loan

guarantees for project sponsors seeking other capital sources, or lines of credit for project sponsors.

Highway Tolls: The use of tolls for highway transportation financing is common nationwide; however in California, it would take special legislation to allow its use on State highways such as Route 99. There are only a few State highway toll roads that have been authorized through legislative action. Through appropriate California legislation, tolls could become a significant non-federal source of funds for Route 99 improvement projects. Federal law provides the authority to levy tolls on federal-aid highways, and under recent federal law, tolls on federal-aid highways can be used as the non-federal match requirement for most programs.

These programs or techniques represent opportunities that might be explored to help finance and advance Route 99 improvements. Most would need to be evaluated for applicability on a project-by-project basis. Some could be applied on a corridor basis. Decisions on whether to proceed would also need significant discussion with stakeholders and MPOs along the corridor, as well as with the CTC.



## 3.17 Economic Benefits

The benefit of capital investments in transportation projects can be felt far more than simply through improved levels of service or aesthetic improvements. One of the most profound effects transportation projects have is the economic benefit they provide to the people within the project area. There are three types of economic benefits that occur when a transportation project is built in a regional economy:

- Direct Benefits – The number of jobs created by the amount of dollars invested
- Indirect Benefits – The number of jobs created as a result of inputs (goods and services) needed to support the transportation project construction
- Induced Benefits – The total of the consumption by employees in both the direct and indirect categories benefit industries

The Direct Benefit is very easy to measure. It is simply the number of employees hired to construct a project. The Indirect Benefit is a little more complicated and must be calculated using an input-output model. This model takes into account the inter-related nature of an economy and how the inputs of one industry are the outputs of another, and visa versa. The input-output model used for this report is the IMPLAN model developed at the University of Minnesota. This model is widely used to calculate the regional effect of economic activity in various regions across California.

The final benefit is the Induced Benefit, which is the total amount of consumption attributed to both the Direct and Indirect employees. This type of consumption varies from groceries to

doctors' services. These three economic benefits combine to quantify the total economic benefit produced by a transportation project in a specific region. Using the IMPLAN model, the following effects have been calculated:

- For every one billion dollars of transportation spending in California, approximately 18,000 jobs are created.
- For every construction job created, an additional .76 jobs are created in the region for a total multiplier effect of 1.76.
- For every dollar spent on transportation projects in California, an additional 97 cents are created via indirect and induced spending in the State's economy.

A 2004 report published by the Sacramento Regional Research Institute used the IMPLAN model to calculate the regional benefits per one billion dollars invested in transportation projects. The following table is extrapolated from their findings. The definition of the phased approach to implementing the Route 99 Corridor Business Plan shown in the following table can be found in Section 4.3 of this document.

**Figure 3.13 Total Economic Benefit**

***Dollars in Billions***

| | Phase 1 | Phase 2 | Phase 3 | Total |
|---|---|---|---|---|
| Transportation Dollars Spent | $1 | $1 | $4 | **$6** |
| Effect on Economy (Multiplier = 1.97) | $1.97 | $1.97 | $7.88 | **$11.82** |
| Effect on Jobs (Multiplier = 1.76) | 17,866 | 17,866 | 71,464 | **107,196** |

*Source: SRRI Economic Impact of Funding California's Transportation Infrastructure*

Route 99 improvements can also spur economic benefits in terms of business growth and industry diversification, including tourism and higher value-added industries and clusters, as well as rising property values. While it is not possible to identify a specific dollar value for such a tremendous investment, the following areas will experience benefit:

- Quality and quantity of jobs
- Community safety and health
- Public revenues
- Parks
- Infrastructure